

In the Claims:

Please Cancel Claims 65-92.

Please add the following new claims 93-117:

--93. (New) A method of manufacturing an interconnect, said method comprising steps of:

forming a first patterned layer of conductive material, said first patterned layer having at least one trench;

depositing a first insulating layer over said first patterned layer, said first insulating layer filling said at least one trench;

depositing a first hard mask on said first insulating layer;

forming a first air gap, a second air gap, and a support pillar in said first hard mask and said first insulating layer, said support pillar being situated between said first air gap and said second air gap;

depositing a sealing layer over said first hard mask to seal said first air and said second air gap.--

--94. (New) The method of claim 93 wherein said step of forming a first air gap and a second air gap includes steps of:

applying a photoresist material to said first hard mask, said photoresist material defining an air gap pattern;
etching said first air gap and said second air gap in said first hard mask and said first insulating layer based on said air gap pattern.--

--95. (New) The method of claim 93 further comprising a step of opening a via hole in said sealing layer, said first hard mask, and said first insulating layer.--

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--96. (New) The method of claim 95 wherein said step of opening a via hole in said sealing layer, said first hard mask, and said first insulating layer includes steps of:
applying a photoresist material to said sealing layer, said photoresist material defining a via hole pattern;
etching a via hole in said sealing layer, said first hard mask, and said first insulating layer based on said via hole pattern.--

--97. (New) The method of claim 95 further comprising steps of:
forming a conductive plug in said via hole;
forming a second patterned layer of conductive material over said sealing layer.--

--98. (New) The method of claim 93 further comprising steps of:
depositing a second insulating layer over said sealing layer;

forming a via hole through said second insulating layer, said sealing layer, said first hard mask, and said first insulating layer.--

--99. (New) The method of claim 98 further comprising steps of:
forming a conductive plug in said via hole;
forming a second patterned layer of conductive material over said sealing layer.--

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--100. (New) The method of claim 93 further comprising steps of:
depositing a second insulating layer over said sealing layer;
depositing a second hard mask over said second insulating layer;
forming a via hole through said second hard mask, said second insulating layer,
said sealing layer, said first hard mask, and said first insulating layer.--

--101. (New) The method of claim 100 further comprising steps of:
forming a conductive plug in said via hole;
forming a second patterned layer of conductive material over said second hard
mask.--

--102. (New) The method of claim 93 wherein said sealing layer comprises a low
dielectric constant material.--

--103. (New) The method of claim 93 wherein said first insulating material comprises a low dielectric constant material.--

--104. (New) The method of claim 93 wherein said first patterned layer of conductive material comprises material selected from the group consisting of polysilicon, titanium, titanium nitride, tantalum, tantalum nitride, tungsten, copper, aluminum, and aluminum alloy.--

--105. (New) A method of manufacturing an interconnect, said method comprising steps of:

forming a first patterned layer of conductive material, said first patterned layer having at least one trench;

depositing a first insulating layer over said first patterned layer, said first insulating layer filling said at least one trench;

depositing a second insulating layer over said first insulating layer;

depositing a first hard mask on said second insulating layer;

forming a first air gap, a second air gap, and a support pillar in said first hard mask, said second insulating layer, and said first insulating layer, said support pillar being situated between said first air gap and said second air gap;

depositing a sealing layer over said first hard mask to seal said first air gap and said second air gap.--

--106. (New) The method of claim 105 wherein said step of forming a first air gap and a second air gap includes steps of:

 applying a photoresist material to said first hard mask, said photoresist material defining an air gap pattern;
 etching said first air gap and said second air gap in said first hard mask, said second insulating layer, and said first insulating layer based on said air gap pattern.--

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CMD. --107. (New) The method of claim 105 further comprising a step of opening a via hole in said sealing layer, said first hard mask, said second insulating layer, and said first insulating layer.--

--108. (New) The method of claim 107 wherein said step of opening a via hole in said sealing layer, said first hard mask, said second insulating layer, and said first insulating layer includes steps of:

 applying a photoresist material to said sealing layer, said photoresist material defining a via hole pattern;
 etching a via hole in said sealing layer, said first hard mask, said second insulating layer, and said first insulating layer based on said via hole pattern.--

--109. (New) The method of claim 107 further comprising steps of:

forming a conductive plug in said via hole;

forming a second patterned layer of conductive material over said sealing layer.--

--110. (New) The method of claim 105 further comprising steps of:

depositing a third insulating layer over said sealing layer;

forming a via hole through said third insulating layer, said sealing layer, said first hard mask, said second insulating layer, and said first insulating layer.--

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--111. (New) The method of claim 110 further comprising steps of:

forming a conductive plug in said via hole;

forming a second patterned layer of conductive material over said sealing layer.--

--112. (New) The method of claim 105 further comprising steps of:

depositing a third insulating layer over said sealing layer;

depositing a second hard mask over said third insulating layer;

forming a via hole through said second hard mask, said third insulating layer, said sealing layer, said first hard mask, said second insulating layer, and said first insulating layer.--

--113. (New) The method of claim 112 further comprising steps of:

forming a conductive plug in said via hole;

forming a second patterned layer of conductive material over said second hard mask.--

--114. (New) The method of claim 105 wherein said sealing layer comprises a low dielectric constant material.--

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--115. (New) The method of claim 105 wherein said first insulating material comprises a low dielectric constant material.--

--116. (New) The method of claim 105 wherein said second insulating material comprises silicon dioxide.--

--117. (New) The method of claim 105 wherein said first patterned layer of conductive material comprises material selected from the group consisting of polysilicon, titanium, titanium nitride, tantalum, tantalum nitride, tungsten, copper, aluminum, and aluminum alloy.--